UNITED STATES PATENT AND TRADEMARK OFFICE

A

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,452	03/01/2004	Norifumi Nishikawa	501.43546X00	7378

24956 7590 08/11/2005

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
1800 DIAGONAL ROAD
SUITE 370
ALEXANDRIA, VA 22314

EXAMINER	
GU, SHAWN X	

ART UNIT	PAPER NUMBER
2189	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/788,452	NISHIKAWA ET AL.	
	Examiner	Art Unit	
	Shawn Gu	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☒ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/1/04,5/25/04,*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

2. Claims 1-15 are pending.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 01 March 2004, 25 May 2004, and 14 September 2004 were filed on the mailing date of the application on 01 March 2004. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 1a, 1b, 2a, 2b, 12. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be

notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claim 12 is objected to because of the following informalities: the term "other" on line 3 of claim 12 should be changed to "a second", and the term "other" on line 7 of claim 12 should be changed to "said second". Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. As to claim 9, it is unclear whether it is the "computer" or the "storage subsystem" mentioned in the claim that comprises the claim's limitations. The examiner is interpreting that the "storage subsystem" comprises these limitations.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application

filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Don et al. [U.S. 6,732,231 B1].

10. As to claim 9, Don et al. discloses a computer (Host System, Figure 1, 140) connected to a storage subsystem (Figure 1, 149), comprising a processing unit (Column 4, Line 53), an interface (Host Adapter, Figure 1, 144) via which said computer is connected to said storage subsystem. The said processing unit checks (Column 11, Line 13) if configuration information (serial number, Column 11, Lines 12-13) employed in said computer is stored at a predetermined location (CE cylinder, Column 11, Lines 14-15) in said storage subsystem; and if said configuration information is not stored at said predetermined location, configuration information is created (Column 9, Lines 20-25) and transmitted (Column 9, Lines 31-34) to said storage subsystem via said interface.

Thus, Don et al. reasonably appears to disclose every limitation of claim 9 and therefore anticipates the claim within the meaning of 35 U.S.C. 102.

11. As to claim 10, when the configuration information disclosed by Don et al. is stored at said predetermined location, said processing unit reads said configuration information via said interface (Column 11, Lines 12-13), and sets up said computer according to the contents of said configuration information (Column 11, Lines 18-33; Figure 14, 420, 422, 423, 424).

12. As to claim 11, the computer disclosed by Don et al. adds a drive included in the said storage subsystem (Column 9, Lines 31-33) during its setup (Initial Program Load, Column 9, Line 31). It is inherent that a computer has one or more operating systems implemented, and the operating system in turn contains a file system. For the operating system to be able to read and write to a volume (drive) added to the computer, it must be mounted in (made accessible to) the file system.

13. Claims 12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. [U.S. 6,898,727 B1].

14. As to claim 12, Wang et al. discloses a storage subsystem (Figure 7, Secondary Host Computer 720, Storage Adapter 132B, Storage Processor 133, Controller 760, Transformation Engine 765, and Storage Device 135 that is accessible to Secondary Host Computer 720, Column 25, Lines 36-37) comprising: a port (suggested by interconnection in Figure 7 between Storage Processor 133 and Storage Device 135 that is accessible to Primary Host Computer 710, Column 23, Lines 26-27) via which said storage subsystem is connected to other storage subsystem (Figure 7, Storage Device 135 that is accessible to Primary Host Computer 710, Column 23, Lines 26-27); a control unit (Figure 7, Storage Processor 133, Controller 760, Transformation Engine 765; Column 24, Lines 8-11) connected to said port; and a disk drive (Figure 7, 135 that is accessible to 720, Column 25, Lines 36-37) connected to said control unit. The said control unit receives data from other storage subsystem via said port (Column 23, Lines 17-19). If the received data contains configuration information (Operating System Data and Application Program Data of Primary Host Computer 710, Figure 7; Column 25, Lines 39-42), said control unit compares information contained in said configuration information with information on the configuration of said storage subsystem (Column 25, Lines 14-16; Figure 8, 828); and if the pieces of information agree with each other said control unit stores said configuration information at a predetermined location in said disk drive (Column 25, Lines 31-36; Figure 8, 830).

Thus, Wang et al. reasonably appears to disclose every limitation of claim 2 and therefore anticipates the claim within the meaning of 35 U.S.C. 102.

15. As to claim 13, the control unit of the storage subsystem disclosed by Wang et al. does not store said configuration information in said disk drive if the pieces of information disagree with each other, since the said configuration information is transformed into different data before being stored (Column 25, Lines 52-58).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Don et al., further in view of Wang et al.

18. As to claim 1, Don et al. discloses a computer system (Figure 1) comprising: a first computer (Figure 1, 113; Column 4, Line 53), a first storage subsystem (Figure 1, 119) connected to said first computer; and a second storage subsystem (Figure 1, 149; Column 5, Lines 2-6) connected to said first storage system. The said first storage subsystem stores configuration information (Data Structure, Figure 11) at a predetermined location (CE cylinder, Column 10, Lines 20-21) in said first storage subsystem, and transfers data (contents of CE cylinder 232, Column 11, Lines 9-10), which contains said configuration information and is stored in said first storage

subsystem, to said second storage subsystem (Column 10, Lines 30-31; Column 11, Lines 9-12); and said second storage subsystem receives the data sent from said first storage subsystem, checks if the received data contains said configuration information (Column 11, Lines 17-20), and stores said configuration information at a predetermined location (Column 10, Lines 30-31; CE cylinder 233, Column 11, Lines 9-12).

The reference does not teach that the said configuration information is transmitted from the first computer to the first storage subsystem. However, Wang et al. teaches a fault-tolerant computer system (see Abstract) similar to the fault-tolerant computer system (Column 1, Lines 37-43) disclosed by Don et al., and Wang et al.'s system teaches a first host computer (Figure 7, 710) transmitting configuration information (Column 23, Lines 55-67) to a first storage subsystem (Figure 7, 135 that is accessible to 710, Column 23, Lines 26-27). Wang et al.'s system comprises this technique in order to provide a fault-tolerant computing system where a second computer can configure itself using the configuration information stored by the first computer, and thereby supporting continuous operation in place of the first computer when it malfunctions. The configuration information used by the second computer Don et al.'s system is not transmitted from the first computer since the configuration information only relates to the first storage subsystem. Yet it would have been obvious to one ordinarily skilled in the art during the time of the applicant's invention that the technique disclosed by Wang et al. can be utilized by Don et al.'s system, which already provides the means for backing up and transmitting configuration information from the first storage subsystem to the second storage subsystem and then to the second

computer, in order to provide further redundancy and reliability in a fault-tolerant computer system.

19. As to claim 2, the computer system disclosed by Don et al. further comprises a second computer (Figure 1, 140) connected to said second storage subsystem (Figure 1, 149). The said second computer checks (Column 11, Lines 12-15) if said configuration information is stored at said predetermined location in said second storage subsystem (Column 11, Lines 17-20), reads said configuration information from said predetermined location, and determines a variable (serial number), which is employed in said second computer, according to information contained in said configuration information (Column 11, Lines 21-32).

Although Don et al. does not teach "various variables" contained in the configuration information, the various variables contained in Wang et al.'s configuration information (Column 9, Lines 59-63) can be included in Don et al.'s configuration information for the same reason and motivation discussed above.

20. As to claim 3, it is obvious to one ordinarily skilled in the art at the time of applicant's invention that in a fault-tolerant system that provides data storage redundancy, the updated data of the first storage subsystem needs to be replicated or transmitted to the second storage subsystem. Don et al. discloses that it is a basic approach that whenever the first computer makes a data transfer to the first storage subsystem, the data is also transferred to the second storage subsystem (Column 1, Lines 45-47). Also, Don et al. discloses that the second storage subsystem stores the

updated data at a location, at which updated data should be stored (CE cylinder, Column 11, Lines 9-12; Figure 13, 410).

21. As to claim 4, Don et al. discloses a controller (service processor, Figure 1, 150) in the second storage subsystem (Figure 1, 149) that implements the logics of the invention (Column 5, Lines 16-19), which includes checking if the received data contains said configuration information (Column 11, Lines 17-20), and storing said configuration information at a predetermined location (Column 10, Lines 30-31; CE cylinder 233, Column 11, Lines 9-12).

Wang et al. discloses a controller (Figure 7, 760, 133) belonging to a second storage subsystem (Figure 7, 132B, 133, 760, 765, and 135 that is accessible to 720, Column 25, Lines 36-37), which compares information contained in said configuration information with information on the configuration of said second storage subsystem (Column 25, Lines 14-16), and if the pieces of information disagree with each other, storing said configuration information at said predetermined location is suspended, and transformed to allow operation on the secondary host computer (Column 25, Lines 52-58), in order to provide a fault-tolerant computer system. Therefore it would have been obvious to one ordinarily skilled in the art at the time of the applicant's invention that this technique can be incorporated into Don et al.'s controller in the second storage subsystem to further increase its ability to provide a fault-tolerant computer system.

22. Claims 5-8, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Don et al., further in view of Wang et al. and Tzelnic et al. [U.S. 6,366,987 B1].

23. As to claim 5, the computer system disclosed by Don et al., further in view of Wang et al. enables the transfer and replication of data from one storage subsystem to another in order to provide data redundancy for a fault-tolerant computer system. Furthermore, Wang et al.'s configuration system contains information of the operating system on the first computer (Column 9, Line 61). Tzelnic et al. discloses a backup storage system (see Abstract) wherein configuration information (backup commands, Column 6, Line 10-11) contains an identifier for the volume (units of data storage specified, Column 6, Lines 10-11) said first storage subsystem (primary data storage subsystem, Column 6, Line 12) provides for said first computer (host, Column 6, Line 11). The configuration information further contains information on a directory (primary directory, Column 6, Lines 29-30) in which said volume is mounted (Column 6, Lines 29-31; Microsoft Computer Dictionary, p348). It would have been obvious to one ordinarily skilled in the art at the time of the applicant's invention that for an operating system in the backup or second computer of a fault-tolerant computer system to continuously read and operated on the transferred data from the first computer, such information included in Tzelnic's configuration information should be included in the configuration information disclosed by Don et al., further in view of Wang et al.

As for the said predetermined location in said first storage subsystem being a leading location in said volume, Don et al. already discloses that its configuration information is placed in a predetermined area that is typically the last physical cylinder (Column 10, Lines 20-24), which is not available for storing production data, and therefore a good choice for storing device identification information (Column 10, lines

25-28). It would have been obvious to one ordinarily skilled in the art at the time of the applicant's invention that the Master Boot Record (MBR) of hard disk in a Personal Computer is always located at cylinder 0, head 0, and sector 1 (the first sector, or the leading location) on the disk, where key information about the disk such as the number of partitions is stored. Although Don et al. does not teach that such predetermined area is the leading location, It would have been obvious to one ordinarily skilled in the art at the time of the applicant's invention that such arrangement can be made in Don et al's invention, as long as it provides a predetermined and known location for the configuration information to be stored and found.

24. As to claim 6-8, the configuration information disclosed by Don et al., in further view of Wang et al. as discussed above contains information on environmental variables relevant to said first computer (Wang et al., Column 23, Lines 57-59), definition information on a database management system that runs in said first computer and first storage subsystem (Wang et al., Column 22, Lines 30-31; Column 23, Lines 59-61), and definition information on an application that runs in said first computer (Wang et al., Column 23, Lines 59-61). For claim 7, Wang et al. regards a database management system such as ORACLE as an application (Wang et al., Column 22, Lines 30-31, and Column 27, Line 27).

25. As to claim 15, its limitations are already substantially disclosed by claims 1, 2, and 5-8, and it is therefore rejected on the same grounds of the rejections of said claims.

26. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al., further in view of Don et al. and Tzelnic et al.

27. As to claim 14, the said configuration information is already substantially disclosed in claim 5, and the claim is therefore rejected based on the same rationale.

Conclusion

28. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure.

Patent No:

U.S. 5,799,322	System and Method for Stopping Updates at a Specified Timestamp in a Remote Duplicate Database Facility
U.S. 6,922,761 B2	Method and System for Migrating Data
U.S. 5,455,932	Fault Tolerant Computer System
U.S. 6,157,991	Method and Apparatus for Asynchronously Updating a Mirror of a Source Device
U.S. 6,442,551 B1	Method and Apparatus for Independent and Simultaneous Access to a Common Data Set

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn Gu whose telephone number is (571) 272-0703. The examiner can normally be reached on 9am-5pm, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571)272-4210. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S.G.

Shawn X Gu
Assistant Examiner
Art Unit 2189

3 August 2005

GARY PORTKA
PRIMARY EXAMINER